

Write your name here

Surname

Other names

Centre Number

Candidate Number

Edexcel GCSE

Methods in Mathematics

Unit 2: Methods 2

For Approved Pilot Centres ONLY

Higher Tier

Mock Paper

Time: 1 hour 45 minutes

Paper Reference

5MM2H/01

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 100.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*
- Questions labelled with an **asterisk** (*) are ones where the quality of your written communication will be assessed
– *you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.*


Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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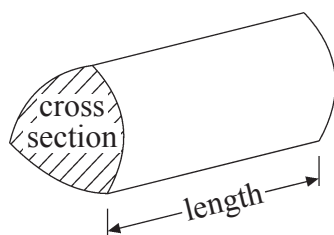
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GCSE Mathematics 2MM01

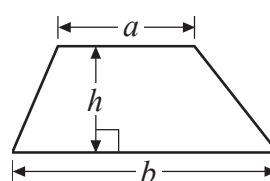
Formulae – Higher Tier

You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

Volume of a prism = area of cross section \times length

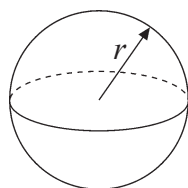


Area of trapezium = $\frac{1}{2}(a + b)h$



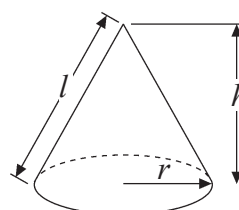
Volume of sphere = $\frac{4}{3}\pi r^3$

Surface area of sphere = $4\pi r^2$

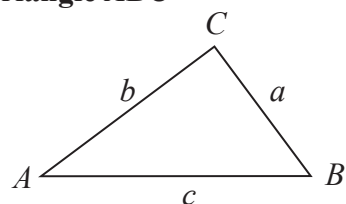


Volume of cone = $\frac{1}{3}\pi r^2 h$

Curved surface area of cone = $\pi r l$



In any triangle ABC



The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$

where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle = $\frac{1}{2}ab \sin C$



Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

- 1 Share 320 in the ratio 1 : 3

.....

(Total for Question 1 is 2 marks)

- 2 Use your calculator to work out $\frac{89.2 - 65.9}{2.5 \times 3.2}$

.....

(Total for Question 2 is 2 marks)

*3

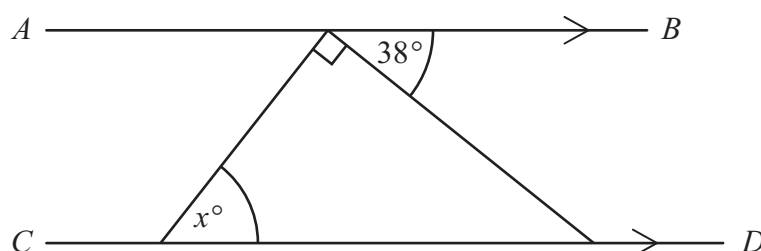


Diagram **NOT**
accurately drawn

AB is parallel to CD .

Work out the size of the angle marked x° .
Give reasons for your answer.

(Total for Question 3 is 3 marks)



4 (a) Work out 45% of 1600

.....
(2)

(b) Increase £240 by 21%

£
(2)

(c) Write 120 out of 200 as a percentage.

..... %
(2)

.....
(Total for Question 4 is 6 marks)

5 7 pens cost £6.23
Work out the cost of 12 of these pens.

£
(Total for Question 5 is 2 marks)



6 $P = 2a + 3b$
 $a = 5$
 $b = 4$

(a) Work out the value of P .

$P = \dots\dots\dots$
 (2)

$L = 5x - 3y$
 $x = -4$
 $y = -2$

(b) Work out the value of L .

$L = \dots\dots\dots$
 (2)

$T = 2w^2 + 3w$
 $w = -5$

(c) Work out the value of T .

$T = \dots\dots\dots$
 (2)

(d) Make a the subject of the formula $v = 6a + u$

$\dots\dots\dots$
 (2)

(Total for Question 6 is 8 marks)



7

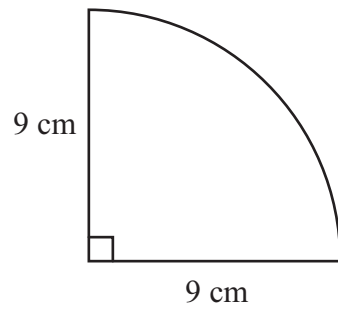


Diagram **NOT**
accurately drawn

A quarter circle has a radius of 9 cm.

Work out the perimeter of the quarter circle.

Give your answer correct to 1 decimal place.

..... cm

(Total for Question 7 is 4 marks)

8 The input for this number machine is t .



Find an expression, in terms of t , for the output.

.....

(Total for Question 8 is 2 marks)



9 Here is a solid cube.

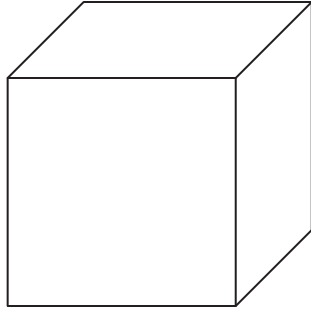


Diagram **NOT**
accurately drawn

The cube has a volume of 125 cm^3 .

Work out the surface area of the cube.

..... cm^2

(Total for Question 9 is 4 marks)



10 n is an integer and $-1 \leq n < 4$

(a) Write down all the possible values of n .

.....
(2)

(b) Solve $2x - 5 > 11$

.....
(2)

(Total for Question 10 is 4 marks)

11

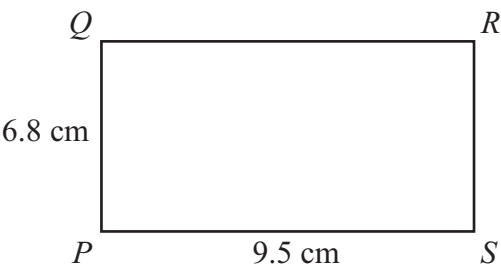


Diagram **NOT**
accurately drawn

$PQRS$ is a rectangle.
Work out the length of the diagonal PR .
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 11 is 3 marks)



12 The diagram shows a solid prism.

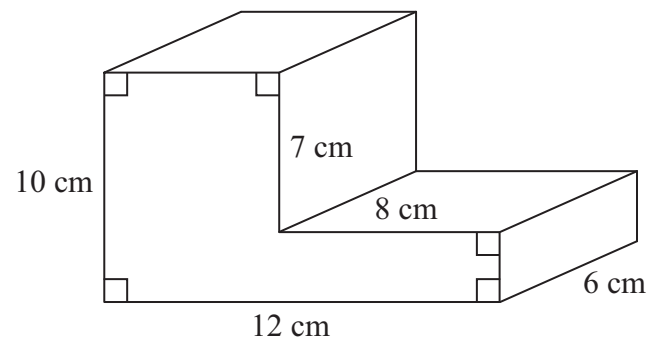


Diagram **NOT**
accurately drawn

Work out the volume of the prism.

(Total for Question 12 is 5 marks)

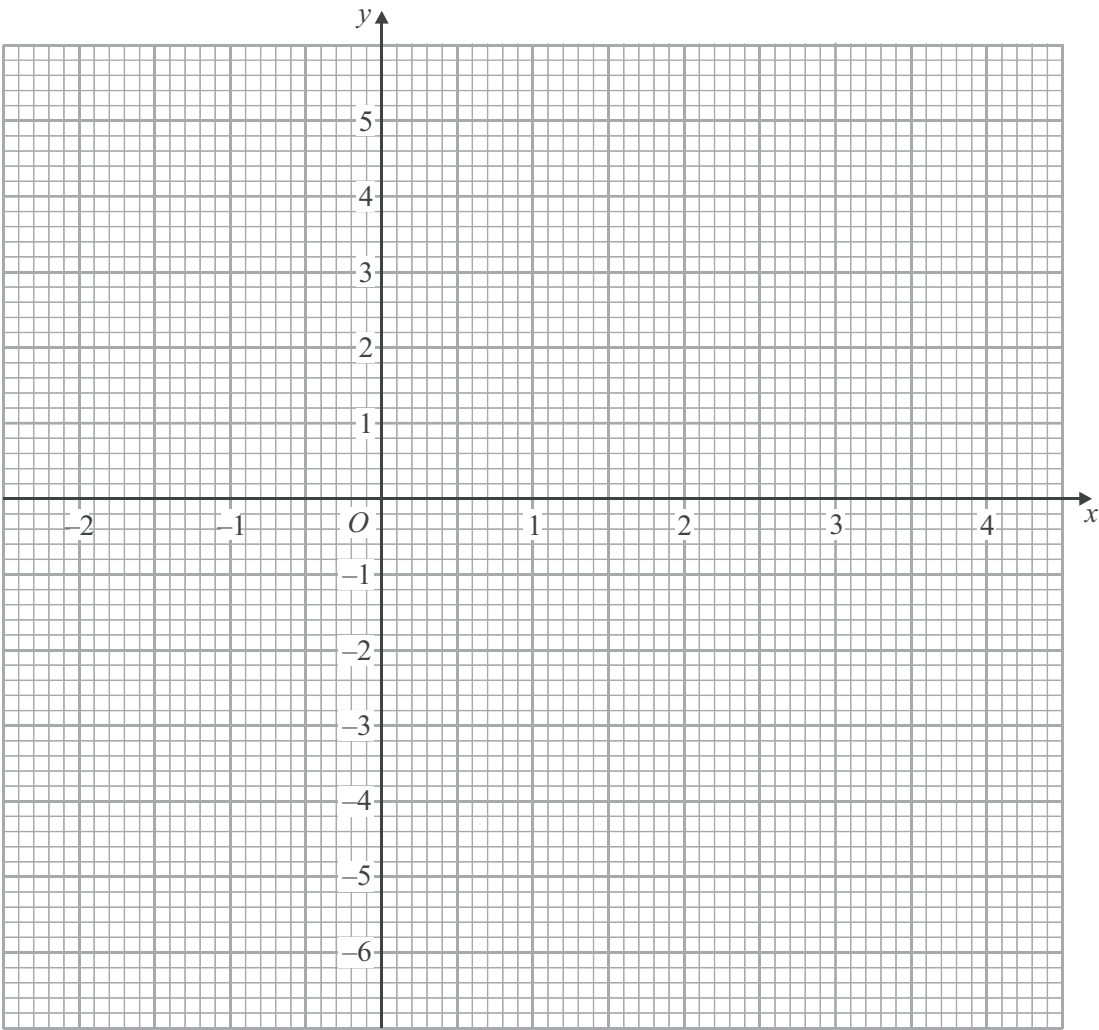


13 (a) Complete the table for $y = x^2 - 2x - 4$

x	-2	-1	0	1	2	3	4
y		-1		-5	-4		4

(2)

(b) On the grid, draw the graph of $y = x^2 - 2x - 4$



(2)

(c) Use the graph to find estimates of the values of x for which $x^2 - 2x - 4 = 0$

(2)

(Total for Question 13 is 6 marks)



*14 The diagram shows three sides of a regular polygon.

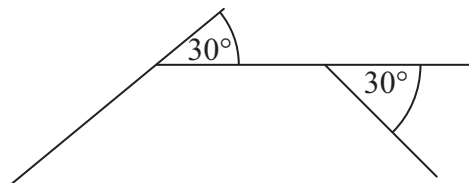


Diagram **NOT**
accurately drawn

Each exterior angle of the polygon is 30° .
Explain why this type of polygon will **not** tessellate.

(Total for Question 14 is 3 marks)

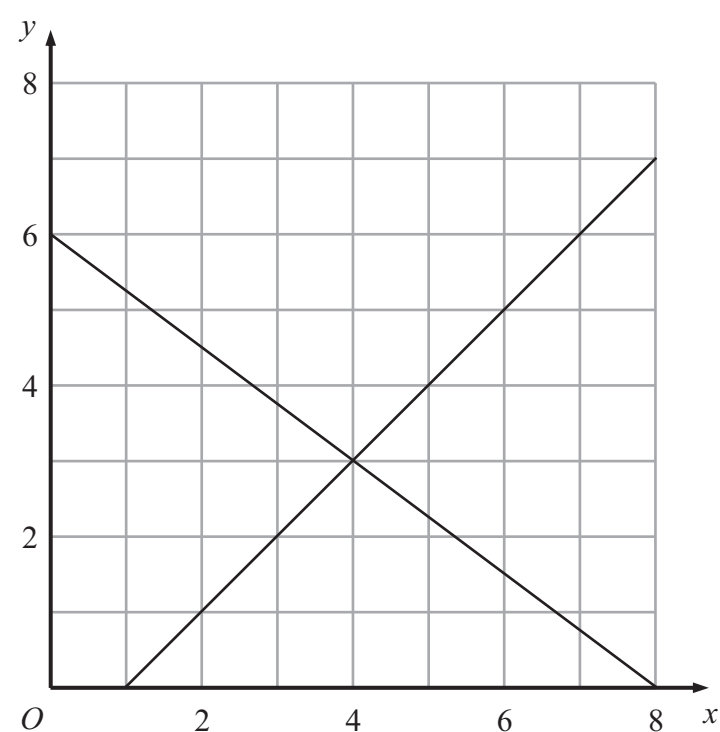
15 $a = \sqrt{\frac{8 \times 10^9 + 3.7 \times 10^8}{2 \times 10^3}}$

Work out the value of a .
Give your answer in standard form correct to 3 significant figures.

(Total for Question 15 is 3 marks)



16 The graphs of the straight lines with equations $4y + 3x = 24$ and $y = x - 1$ have been drawn on the grid.



(a) Use the graphs to solve the simultaneous equations

$$\begin{aligned} 4y + 3x &= 24 \\ y &= x - 1 \end{aligned}$$

$x = \dots\dots\dots$

$y = \dots\dots\dots$

(1)

(b) $4y + 3x < 24$ $y < x - 1$ $x < 5$ $y > 0$

x and y are integers.

On the grid, mark with a cross (×) the **three** points which satisfy **all** these 4 inequalities.

(3)

(Total for Question 16 is 4 marks)



17

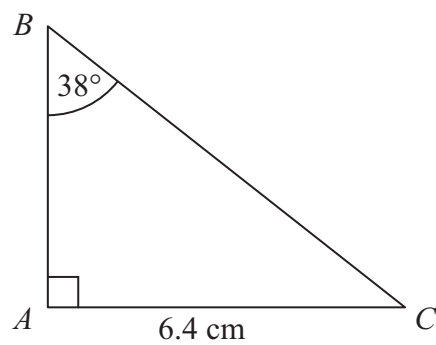


Diagram **NOT**
accurately drawn

ABC is a right-angled triangle.

$AC = 6.4$ cm.

Angle $B = 38^\circ$.

Work out the length of AB .

Give your answer correct to 3 significant figures.

..... cm

(Total for Question 17 is 3 marks)

18 When a number is decreased by 12% the answer is 308
Work out the number.

.....

(Total for Question 18 is 3 marks)



19 Here is a cylinder.

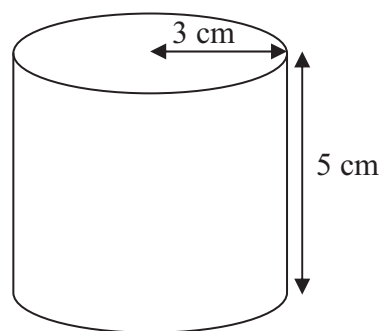


Diagram **NOT**
accurately drawn

The height of the cylinder is 5 cm.
The radius of the cylinder is 3 cm.

Work out the volume of the cylinder.
Give your answer as a multiple of π .

..... cm³

(Total for Question 19 is 2 marks)

20 Make c the subject of the formula $b = \frac{5-3c}{c+2}$

$c =$

(Total for Question 20 is 4 marks)



21 d is directly proportional to the square of m .
 $d = 60$ when $m = 2$

(a) Express d in terms of m .

.....
(3)

(b) Work out the value of d when $m = 6$

$d =$
(1)

(Total for Question 21 is 4 marks)

22 Solve $2x^2 - 7x + 1 = 0$

Give your solutions correct to 2 decimal places.

.....
(Total for Question 22 is 3 marks)



W 3 9 7 3 8 A 0 1 5 2 0

23

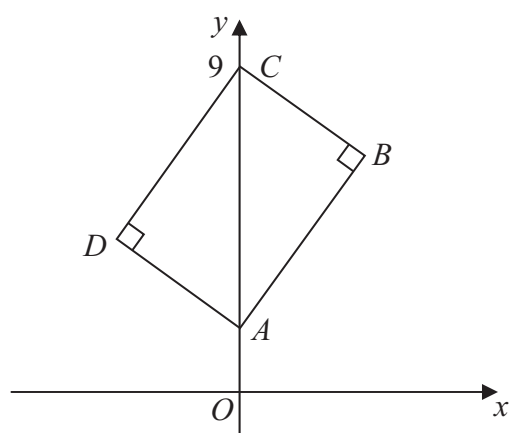


Diagram **NOT**
accurately drawn

$ABCD$ is a rectangle.
 C is the point $(0, 9)$.

The equation of the straight line through A and B is $y = 3x + 2$

Find an equation of the straight line through B and C .

(Total for Question 23 is 2 marks)



24

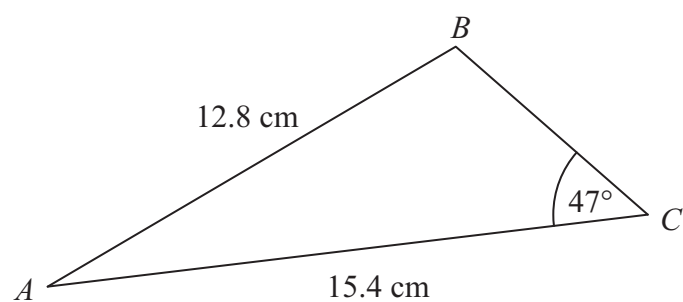


Diagram **NOT**
accurately drawn

Work out the area of triangle ABC .
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 24 is 5 marks)



25

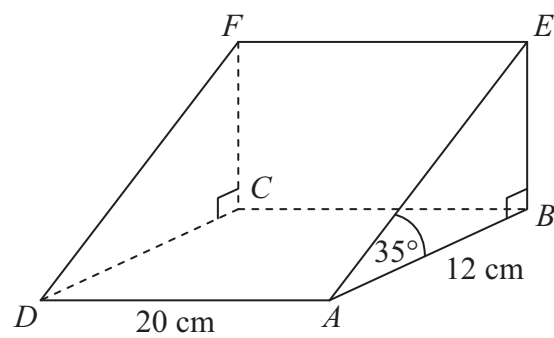


Diagram **NOT**
accurately drawn

The diagram represents a prism.
 $AEFD$ and $ABCD$ are rectangles.

$AB = 12$ cm.

$AD = 20$ cm.

Angle $ABE = \text{Angle } DCF = 90^\circ$.

Angle $BAE = 35^\circ$.

Calculate the size of the angle that the line ED makes with the plane $ABCD$.
Give your answer correct to 1 decimal place.

(Total for Question 25 is 5 marks)



26 Solve the simultaneous equations

$$x^2 + y^2 = 18$$

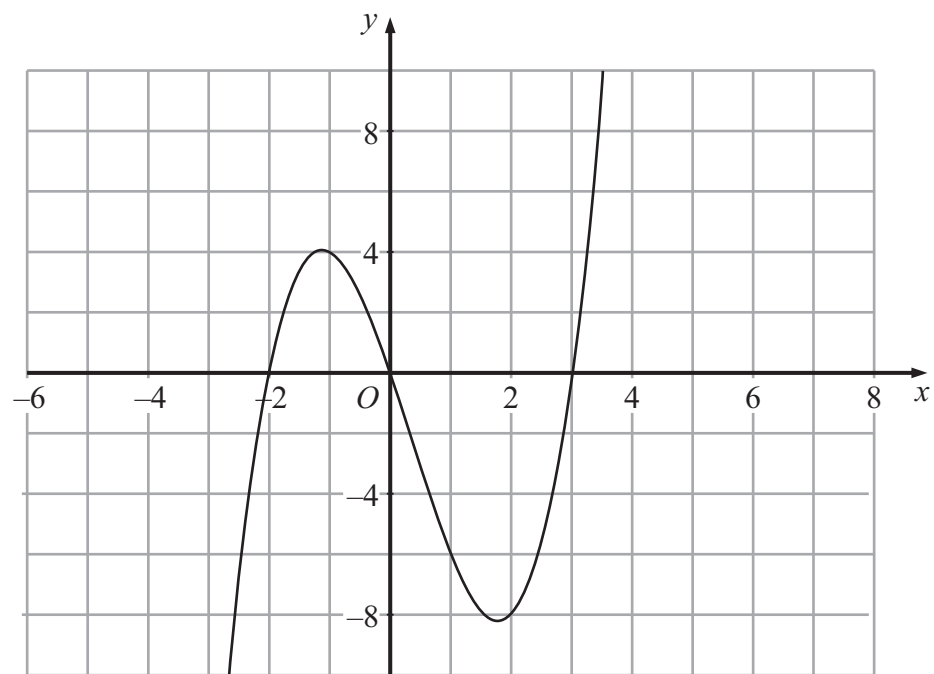
$$x = 2y - 3$$

.....
(Total for Question 26 is 6 marks)



W 3 9 7 3 8 A 0 1 9 2 0

27 The graph of $y = f(x)$ is shown on the grid.
On this grid, sketch the graph of $y = f(x + 2)$



(Total for Question 27 is 2 marks)

TOTAL FOR PAPER IS 100 MARKS

